

# IMPROVING AGRICULTURAL PRODUCTIVITY AND RESILIENCE WITH SATELLITE AND CELLPHONE IMAGERY TO SCALE CLIMATE- SMART CROP INSURANCE

## Implementing Partners

*Agriculture and Climate Risk Enterprise Ltd. (ACRE Africa)*

*Kenya Agricultural & Livestock Research Organization (KALRO)*

*International Food Policy Research Institute (IFPRI)*

*Wageningen University and Research (WUR)*

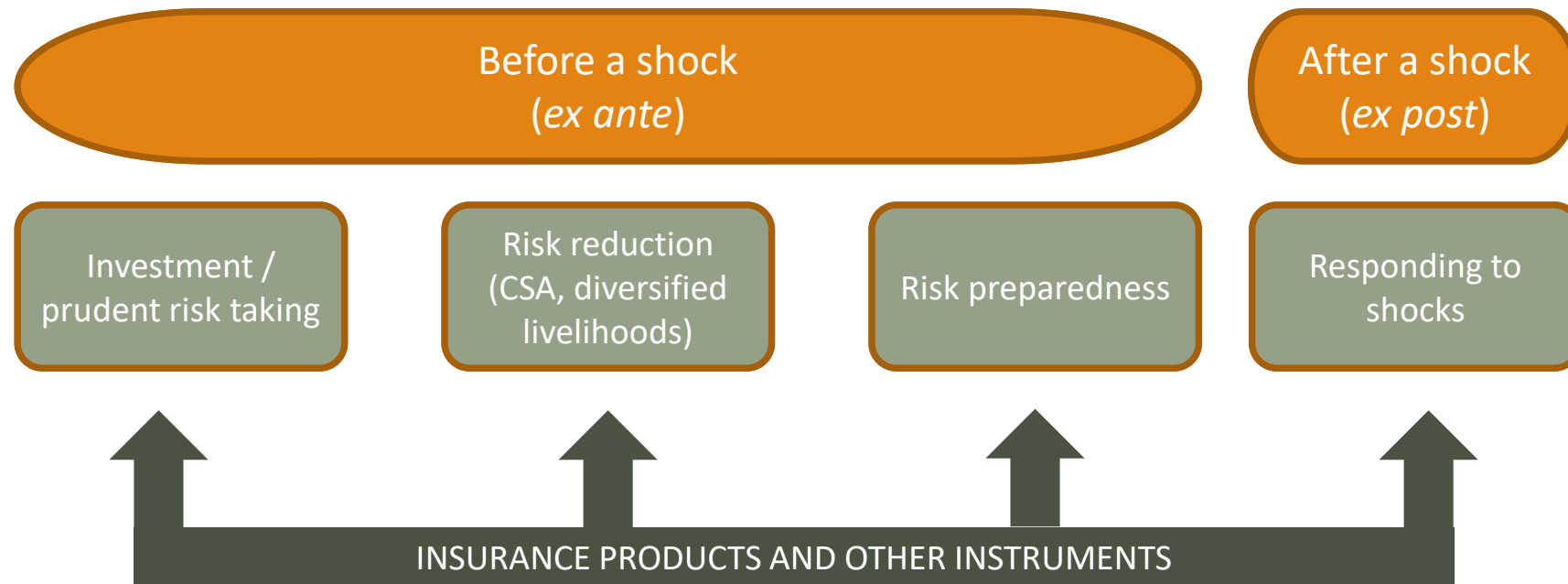


# Livelihood impacts of weather shocks

- **When coping with losses** due to extreme weather, uninsured households cut back **consumption** and reduce investments in their **families' futures**
- **Anticipating the risks** of bad weather, they **underinvest** in their farms



# How can insurance build resilience?



# Challenges in scaling up agriculture Insurance

## Challenges in the scaling of WBII (Hellin *et al.*, 2019):

- Addressing **data availability** and **basis risk**: remote sensing, crop models
- In targeting / designing insurance, recognize **farmer heterogeneity**
- **Distribution channels** – what are trusted channels, marketing at meso- and macro-levels (e.g. agrodealers, banks, aggregators, government)?
- How to optimally bundle index insurance with **climate-smart agriculture** and other types of risk management?
- **Regulatory environment** – In public-private partnerships with government, insurers and reinsurers, how to protect consumers
- What is an **enabling environment** and what are the effects of **smart subsidies**?
- **Impact evaluation** – limited evidence of impacts on farmers' incomes, and on financial institutions and agrodealers
- Capturing the **full value chain** – focus has been on insurance offered to, and impacts for, smallholder farmers

# Objectives

- Co-create a portfolio of innovative picture-based insurance (PBI) contracts that can reliably and rapidly predict weather-related yield losses at low cost by combining satellite data and smartphone pictures to document crop health, growth stages and management.
- Deliver and implement these PBI contracts through media campaigns, telemarketing, ACRE Africa's "Champion Farmers" and partnerships with commercial providers of drought-tolerant maize and sorghum seeds in six counties in Kenya.
- Elicit perceptions of and demand for these PBI contracts compared to existing alternatives in Kenya's insurance markets, paying close attention to differences between male farmers, female farmers and the youth, and integrating findings in product development.
- Assess the impacts of PBI on development outcomes such as productivity, profitability, adoption of resilience technologies, insurance payouts and product sustainability, production diversity, youth and women engagement, and gender outcomes within beneficiary households.
- Promote uptake of research findings through ACRE Africa's operations in Eastern Africa, as well as close engagement with policymakers and other stakeholders in the insurance value chain to ensure uptake of the research findings beyond the scope of the project.

# Picture Based Insurance

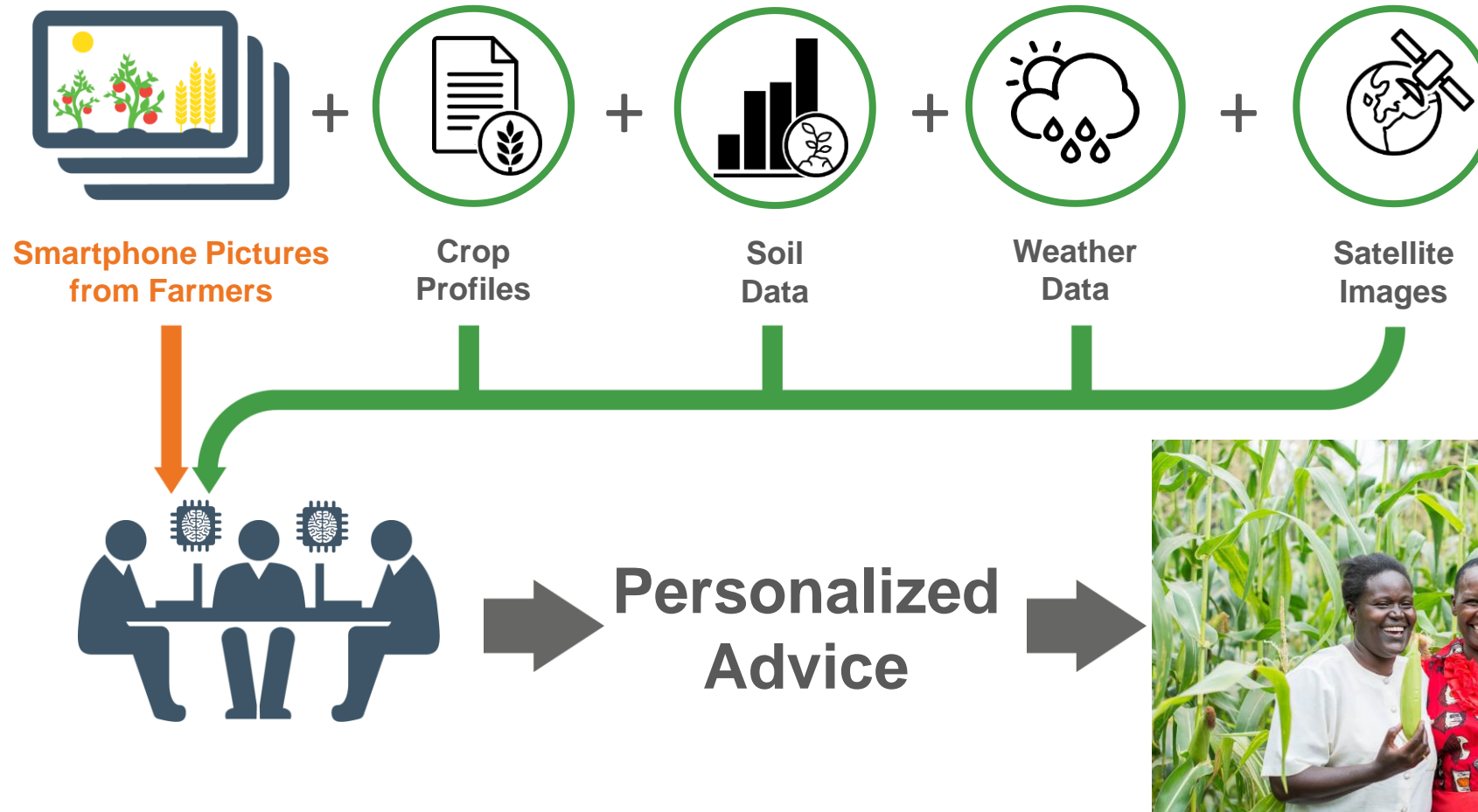


**Hybrid approach: Weather-based index insurance  
+ coverage for visible damage**

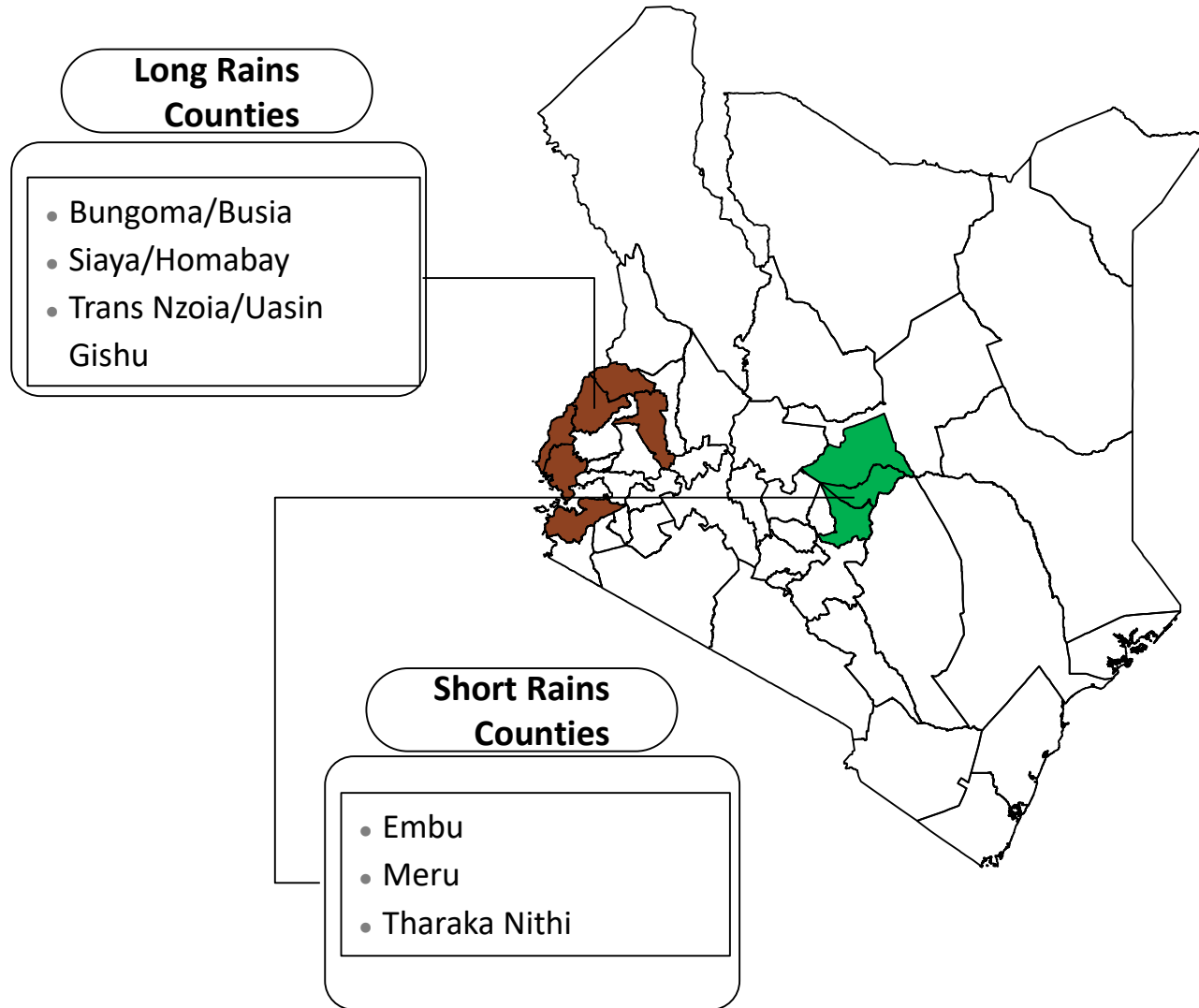
Way to operationalize ‘fail-safe contract design’ or  
‘gap insurance’ (Berhane et al., 2015; Flatnes &  
Carter, 2016; Vargas Hill et al., 2019)



# Picture Based Advisory



# Regions and Crops

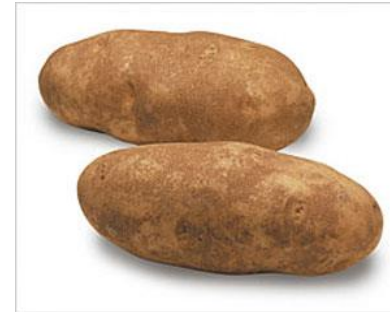


Maize



Sorghum

Which Other crops?



Which Other Region?



# Expected Results

## Research outcomes:

- Portfolio of novel climate-smart imagery-based crop insurance contracts and tools
- Peer-reviewed journal articles and associated knowledge products on:
  - *Validation of climate-smart picture-based insurance products for smallholder farmers in Kenya*
  - *Demand for picture-based insurance and impacts on primary development outcomes*
  - *Insurance contract design to optimize impacts for women and the youth*
- Disseminate research findings for stakeholders and scaling through private sector

## Development outcomes:

- We anticipate reaching 45,000 smallholder farmers in 6 Kenyan counties with an **enhanced** replanting guarantee scheme
- Improved coping with shocks and reduced risk exposure: Improved investments and resilience

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